AMENDMENTS TO THE CLAIMS

The following is a copy of Applicants' claims that identifies language being added with underlining ("___") and language being deleted with strikethrough ("~~___~~"), as is applicable:

1. (Currently Amended) A method comprising the steps of:

interactively obtaining neuro-ocular wavefront data representative of anomalies in a visual system of a subject, the neuro-ocular wavefront data being represented by an equation, the equation having coefficients; and

correlating the neuro-ocular wavefront data to confounding ~~confoundng~~ parameters associated with the visual system of the subject, each parameter being correlated to a coefficient of the equation.

2. (Original) The method of claim 1, further comprising the step of calculating correction factors by inverting the neuro-ocular wavefront data, the correction factors corresponding to a treatment for reducing the anomalies in the visual system of the subject.

3. (Original) The method of claim 2, the correction factors corresponding to a prescription for spectacles.

4. (Original) The method of claim 2, the correction factors corresponding to a prescription for a contact lens.

5. (Original) The method of claim 2, the correction factors corresponding to a treatment profile for a refractive surgical technique.

6. (Original) The method of claim 5, the refractive surgical technique being one selected from the group consisting of:

radial keratotomy (RK);

astigmatic keratotomy (AK);

automated lamellar keratoplasty (ALK);

photorefractive keratectomy (PRK);

laser in situ keratomileusis (LASIK);

intracorneal ring segments (Intacs);

intracornea lens surgery;

laser thermal keratoplasty (LTK);

phakic intraocular lenses; and

any combination thereof.

7-12. (Withdrawn)

13. (Original) A system comprising:

means for interactively obtaining neuro-ocular wavefront data from a subject, the obtained neuro-ocular wavefront data representing anomalies in the visual system of the subject, the neuro-ocular wavefront data being represented by an equation, the equation having coefficients; and

means for correlating the neuro-ocular wavefront data to confounding parameters associated with the visual system of the subject, each parameter being correlated to a coefficient of the equation.

14. (Original) The system of claim 13, further comprising means for calculating correction factors by inverting the neuro-ocular wavefront data, the correction factors corresponding to a treatment for reducing the anomalies in the visual system of the subject.

15. (Original) A computer-readable medium comprising:

computer-readable code adapted to instruct a programmable device to interactively obtain neuro-ocular wavefront data from a subject, the obtained neuro-ocular wavefront data representing anomalies in the visual system of the subject, the neuro-ocular wavefront data being represented by an equation, the equation having coefficients; and

computer-readable code adapted to instruct a programmable device to correlate the neuro-ocular wavefront data to parameters associated with the visual system of the subject, each parameter being correlated to a coefficient of the equation.

16. (Original) The computer-readable medium of claim 15, further comprising computer-readable code adapted to instruct a programmable device to calculate correction factors by inverting the neuro-ocular wavefront data, the correction factors corresponding to a treatment for reducing the anomalies in the visual system of the subject.

17. (Original) A method comprising the steps of:

obtaining neuro-ocular wavefront data; and

correlating the neuro-ocular wavefront data to a vision parameter of a subject.

18. (Original) The method of claim 17, the step of obtaining the neuro-ocular wavefront data comprising the steps of:

identifying visual zones, each visual zone corresponding to a different region of an eye; and

interactively obtaining information related to the visual zones.

19. (Original) The method of claim 18, the step of identifying visual zones related to the eye comprising the steps of:

identifying an area associated with an entrance pupil of the eye; and

overlaying a virtual matrix onto the identified area, each element of the matrix corresponding to one of the visual zones.

20. (Original) The method of claim 19, the virtual matrix being a predefined matrix.

21. (Original) The method of claim 19, the virtual matrix being a customized matrix.

22. (Original) The method of claim 19, the step of interactively obtaining information comprising the steps of:

projecting a reticule image at approximately the center of a pupil of an eye;

selecting a visual zone;

projecting a target image at the selected visual zone; and

querying the subject for input, the input reflecting an alignment of the reticule image with the target image at the selected visual zone.

23. (Original) The method of claim 19, the step of interactively obtaining information comprising the steps of:

projecting a reticule image at approximately the location of the first Pukinje image;

selecting a visual zone;

projecting a target image at the selected visual zone; and

querying the subject for input, the input reflecting an alignment of the reticule image with the target image at the selected visual zone.

24. (Original) The method of claim 19, the step of interactively obtaining information comprising the steps of:

projecting a reticule image at approximately the center of a pupil of an eye;

selecting a region on the pupil of the eye, the selected region being substantially independent of a visual zone;

projecting a target image at the selected region; and

querying the subject for input, the input reflecting an alignment of the reticule image with the target image at the selected region.

25. (Original) The method of claim 19, the step of interactively obtaining information comprising the steps of:

projecting a reticule image at approximately the location of the first Pukinje image;

selecting a region on the pupil of the eye, the selected region being substantially independent of a visual zone;

projecting a target image at the selected region; and

querying the subject for input, the input reflecting an alignment of the reticule image with the target image at the selected region.

26. (Original) The method of claim 19, the step of interactively obtaining information comprising the steps of:

projecting a reticule image at approximately the center of a pupil of an eye;

recursively:

selecting different visual zones;

projecting a target image at each of the different selected visual zones; and

querying the subject for input, the input reflecting an alignment of the reticule image with the target image at each of the different visual zones.

27. (Original) The method of claim19, the step of interactively obtaining information comprising the steps of:

projecting a reticule image at approximately the location of the first Pukinje image;

recursively:

selecting different visual zones;

projecting a target image at each of the different selected visual zones; and

querying the subject for input, the input reflecting an alignment of the reticule image with the target image at each of the different visual zones.

28. (Currently Amended) The method of claim 17 [[16]], further comprising the step of storing the inputs from the subject for each of the different visual zones.

29. (Original) The method of claim 28, further comprising the steps of:

generating an equation from the stored inputs, the equation having coefficients, each of the coefficients representing a characteristic of the neuro-ocular wavefront data; and

calculating correction factors by inverting the equation, the correction factors being a mathematical function of the coefficients, the correction factors corresponding to a treatment for reducing the anomalies in the visual system of the subject.

30. (Original) The method of claim 29, further comprising the step of producing a simulation of a blur from the generated equation, the simulation of the blur being indicative of an actual blur seen by the subject prior to the treatment for reducing the anomalies in the visual system of the subject.

31. (Original) The method of claim 29, further comprising the step of estimating corrections for annular regions, the annular regions defining concentric areas on the pupil of the eye.

32. (Original) The method of claim 17, further comprising the step of calculating a correction factor by inverting the neuro-ocular wavefront data.

33. (Original) The method of claim 32, the correction factor representing a component of a prescription for spectacles.

34. (Original) The method of claim 32, the correction factor representing a component of a prescription for a contact lens.

35. (Original) The method of claim 32, the correction factor representing a component of a refractive surgical technique.

36. (Original) The method of claim 35, the refractive surgical technique comprising radial keratotomy (RK).

37. (Original) The method of claim 35, the refractive surgical technique comprising astigmatic keratotomy (AK).

38. (Original) The method of claim 35, the refractive surgical technique comprising automated lamellar keratoplasty (ALK).

39. (Original) The method of claim 35, the refractive surgical technique comprising photorefractive keratectomy (PRK).

40. (Original) The method of claim 35, the refractive surgical technique comprising laser in situ keratomileusis (LASIK).

41. (Original) The method of claim 35, the refractive surgical technique comprising intracorneal ring segments (Intacs).

42. (Original) The method of claim 35, the refractive surgical technique comprising laser thermal keratoplasty (LTK).

43. (Original) The method of claim 35, the refractive surgical technique comprising phakic intraocular lenses.

44. (Original) The method of claim 17, the vision parameter comprising an optical parameter.

45. (Original) The method of claim 44, the optical parameter being one selected from the group consisting of:

photopic pupil diameter;

mesopic pupil diameter;

cycloplegic pupil diameter;

near-vision preoperative refraction sphere;

near-vision preoperative refraction cylinder;

near-vision preoperative refraction axis;

far-vision preoperative refraction sphere;

far-vision preoperative refraction cylinder;

far-vision preoperative refraction axis;

near-vision postoperative refraction sphere;

near-vision postoperative refraction cylinder;

near-vision postoperative refraction axis;

far-vision postoperative refraction sphere;

far-vision postoperative refraction cylinder;

far-vision postoperative refraction axis;

left eye;

right eye;

asphericity;

axis angle;

optical zone diameter;

transition zone diameter;

central pachymetry;

spherical aberration as a percent of total root-mean-square (RMS) aberration;

coma as a percent of total RMS aberration;

trefoil as a percent of total RMS aberration;

high-order aberrations as a percent of total RMS aberration;

astigmatism index;

corneal width;

front surface corneal curvature;

back surface corneal curvature;

front-to-back alignment; and

any combination thereof.

46. (Original) The method of claim 17, the vision parameter comprising a subject parameter.

47. (Original) The method of claim 46, the subject parameter being one selected from the group consisting of:

age;

side of dominant eye;

preference between day vision and night vision;

treatment purpose;

ethnicity;

iris color;

gender; and

any combination thereof.

48. (Original) The method of claim 17, the vision parameter comprising an environmental parameter.

49. (Original) The method of claim 48, the environmental parameter being one selected from the group consisting of:

temperature;

humidity;

microkeratome used for corneal resection;

flap size;

time elapsed from opening of flap to ablation;

surgeon;

estimated total time during opening of flap;

expected flap thickness;

procedure type;

scanner used;

laser used;

day of surgery;

location of flap hinge; and

any combination thereof.

50. (Original) A system comprising:

a refractometer configured to interactively obtain neuro-ocular wavefront data from a subject; and

a processor configured to correlate the neuro-ocular wavefront data to a vision parameter associated with the subject.

51. (Original) The system of claim 50, the refractometer further being configured to identify visual zones, each visual zone corresponding to a different region of an eye, the refractometer further being configured to interactively obtain information related to the visual zones.

52. (Original) The system of claim 51, the refractometer further being configured to identify an area associated with an entrance pupil of the eye, the refractometer further being configured to overlay a virtual matrix onto the identified area, each element of the matrix corresponding to one of the visual zones.

53. (Original) The system of claim 52, the refractometer further being configured to project a reticule image at approximately the center of a pupil of an eye, the refractometer further being configured to select a visual zone, the refractometer further being configured to project a target image at the selected visual zone, the refractometer further being configured to query the subject for input, the input reflecting an alignment of the reticule image with the target image at the selected visual zone.

54. (Original) The system of claim 52, the refractometer further being configured to project a reticule image at approximately the location of the first Purkinje image, the refractometer further being configured to select a visual zone, the refractometer further being configured to project a target image at the selected visual zone, the refractometer further being configured to query the subject for input, the input reflecting an alignment of the reticule image with the target image at the selected visual zone.

55. (Original) The system of claim 52, the refractometer further being configured to project a reticule image at approximately the location of the first Purkinje image, the refractometer further being configured to recursively:

select different visual zones;

project a target image at each of the different selected visual zones; and

query the subject for input, the input reflecting an alignment of the reticule image with the target image at each of the different visual zones.

56. (Original) The system of claim 52, the refractometer further being configured to project a reticule image at approximately the center of a pupil of an eye, the refractometer further being configured to recursively:

select different visual zones;

project a target image at each of the different selected visual zones; and

query the subject for input, the input reflecting an alignment of the reticule image with the target image at each of the different visual zones.

57. (Original) The system of claim 56, the refractometer further being configured to store the inputs from the subject for each of the different visual zones.

58. (Original) The system of claim 57, the processor further being configured to generate an equation from the stored inputs, the equation having coefficients, each of the coefficients representing a characteristic of the neuro-ocular wavefront data, the processor further being configured to calculate correction factors by inverting the equation, the correction factors being a mathematical function of the coefficients, the correction factors corresponding to a treatment for reducing the anomalies in the visual system of the subject.

59. (Original) The system of claim 50, the processor further being configured to calculate a correction factor by inverting the neuro-ocular wavefront data.

60. (Original) The system of claim 59, the correction factor representing a component of a prescription for spectacles.

61. (Original) The system of claim 59, the correction factor representing a component of a prescription for a contact lens.

62. (Original) The system of claim 59, the correction factor representing a component of a refractive surgical technique.

63. (Currently Amended) The system of claim 62, the refractive surgical technique being one selected from the group consisting of:

comprises radial keratotomy (RK);

astigmatic keratotomy (AK);

automated lamellar keratoplasty (ALK);

photorefractive keratectomy (PRK);

laser in situ keratomileusis (LASIK);

intracorneal ring segments (Intacs);

intracornea lens surgery;

laser thermal keratoplasty (LTK);

phakic intraocular lenses; and

any combination thereof. ~~thereof~~

64. (Original) The system of claim 50, wherein the vision parameter is one selected from the group consisting of:

photopic pupil diameter;

mesopic pupil diameter;

cycloplegic pupil diameter;

near-vision preoperative refraction sphere;

near-vision preoperative refraction cylinder;

near-vision preoperative refraction axis;

far-vision preoperative refraction sphere;

far-vision preoperative refraction cylinder;

far-vision preoperative refraction axis;

near-vision postoperative refraction sphere;

near-vision postoperative refraction cylinder;

near-vision postoperative refraction axis;

far-vision postoperative refraction sphere;

far-vision postoperative refraction cylinder;

far-vision postoperative refraction axis;

left eye;

right eye;

asphericity;

axis angle;

optical zone diameter;

transition zone diameter;

central pachymetry;

spherical aberration as a percent of total root-mean-square (RMS) aberration;

coma as a percent of total RMS aberration;

trefoil as a percent of total RMS aberration;

high-order aberrations as a percent of total RMS aberration;

astigmatism index;

corneal width;

front surface corneal curvature;

back surface corneal curvature;

front-to-back alignment;

age;

side of dominant eye;

preference between day vision and night vision;

treatment purpose;

ethnicity;

iris color;

gender;

temperature;

humidity;

microkeratome used for corneal resection;

flap size;

time elapsed from opening of flap to ablation;

surgeon;

estimated total time during opening of flap;

expected flap thickness;

procedure type;

scanner used;

laser used;

day of surgery;

location of flap hinge; and

any combination thereof.

65. (Original) A system comprising:

means for obtaining neuro-ocular wavefront data from a subject; and

means for correlating the neuro-ocular wavefront data to a vision parameter of the subject.

66. (Original) The system of claim 65, further comprising:

means for identifying visual zones, each visual zone corresponding to a different region of an eye; and

means for interactively obtaining information related to the visual zones.

67. (Original) The system of claim 66, further comprising:

means for identifying an area associated with an entrance pupil of the eye; and

means for overlaying a virtual matrix onto the identified area, each element of the matrix corresponding to one of the visual zones.

68. (Original) The system of claim 67, further comprising:

means for projecting a reticule image at approximately the center of a pupil of an eye;

means for selecting a visual zone;

means for projecting a target image at the selected visual zone; and

means for querying the subject for input, the input reflecting an alignment of the reticule image with the target image at the selected visual zone.

69. (Original) The system of claim 67, further comprising:

means for projecting a reticule image at approximately the location of the first Purkinje image;

means for recursively selecting different visual zones;

means for projecting a target image at each of the different selected visual zones; and

means for querying the subject for input, the input reflecting an alignment of the reticule image with the target image at each of the different visual zones.

70. (Original) The system of claim 67, further comprising:

means for projecting a reticule image at approximately the center of a pupil of an eye;

means for recursively selecting different visual zones;

means for projecting a target image at each of the different selected visual zones; and

means for querying the subject for input, the input reflecting an alignment of the reticule image with the target image at each of the different visual zones.

71. (Original) The system of claim 70, further comprising means for storing the inputs from the subject for each of the different visual zones.

72. (Original) The system of claim 71, further comprising:

means for generating an equation from the stored inputs, the equation having coefficients, each of the coefficients representing a characteristic of the neuro-ocular wavefront data; and

means for calculating correction factors by inverting the equation, the correction factors being a mathematical function of the coefficients, the correction factors corresponding to a treatment for reducing the anomalies in the visual system of the subject.

73. (Original) The system of claim 65, further comprising means for calculating a correction factor by inverting the neuro-ocular wavefront data.

74. (Original) A computer-readable medium comprising:

computer-readable code adapted to instruct a programmable device to obtain neuro-ocular wavefront data from a subject; and

computer-readable code adapted to instruct a programmable device to correlate the neuro-ocular wavefront data to a vision parameter of the subject.

75. (Original) The computer-readable medium of claim 74, further comprising:

computer-readable code adapted to instruct a programmable device to identify visual zones, each visual zone corresponding to a different region of an eye; and

computer-readable code adapted to instruct a programmable device to interactively obtain information related to the visual zones.

76. (Original) The computer-readable medium of claim 75, further comprising:

computer-readable code adapted to instruct a programmable device to identify an area associated with an entrance pupil of the eye; and

computer-readable code adapted to instruct a programmable device to overlay a virtual matrix onto the identified area, each element of the matrix corresponding to one of the visual zones.

77. (Original) The computer-readable medium of claim 76, further comprising:

computer-readable code adapted to instruct a programmable device to project a reticule image at approximately the location of the first Purkinje image;

computer-readable code adapted to instruct a programmable device to select a visual zone;

computer-readable code adapted to instruct a programmable device to project a target image at the selected visual zone; and

computer-readable code adapted to instruct a programmable device to query the subject for input, the input reflecting an alignment of the reticule image with the target image at the selected visual zone.

78. (Original) The computer-readable medium of claim 76, further comprising:

computer-readable code adapted to instruct a programmable device to project a reticule image at approximately the center of a pupil of an eye;

computer-readable code adapted to instruct a programmable device to select a visual zone;

computer-readable code adapted to instruct a programmable device to project a target image at the selected visual zone; and

computer-readable code adapted to instruct a programmable device to query the subject for input, the input reflecting an alignment of the reticule image with the target image at the selected visual zone.

79. (Original) The computer-readable medium of claim 76, further comprising:

computer-readable code adapted to instruct a programmable device to project a reticule image at approximately the location of the first Purkinje image;

computer-readable code adapted to instruct a programmable device to recursively select different visual zones;

computer-readable code adapted to instruct a programmable device to project a target image at each of the different selected visual zones; and

computer-readable code adapted to instruct a programmable device to query the subject for input, the input reflecting an alignment of the reticule image with the target image at each of the different visual zones.

80. (Original) The computer-readable medium of claim 76, further comprising:

computer-readable code adapted to instruct a programmable device to project a reticule image at approximately the center of a pupil of an eye;

computer-readable code adapted to instruct a programmable device to recursively select different visual zones;

computer-readable code adapted to instruct a programmable device to project a target image at each of the different selected visual zones; and

computer-readable code adapted to instruct a programmable device to query the subject for input, the input reflecting an alignment of the reticule image with the target image at each of the different visual zones.

81. (Original) The computer-readable medium of claim 80, further comprising computer-readable code adapted to instruct a programmable device to store the inputs from the subject for each of the different visual zones.

82. (Original) The computer-readable medium of claim 81, further comprising

computer-readable code adapted to instruct a programmable device to generate an equation from the stored inputs, the equation having coefficients, each of the coefficients representing a characteristic of the neuro-ocular wavefront data; and

computer-readable code adapted to instruct a programmable device to calculate correction factors by inverting the equation, the correction factors being a mathematical function of the coefficients, the correction factors corresponding to a treatment for reducing the anomalies in the vision system of the subject.

83. (Original) The computer-readable medium of claim 74, further comprising computer-readable code adapted to instruct a programmable device to calculate a correction factor by inverting the neuro-ocular wavefront data.

84-135. (Withdrawn)